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ABSTRACT

In New York State, strengthening of its evaluation of educational provision was started with the Elementary and Secondary Education Act Title III; review and training sessions, paid for out of Title III funds, were provided over a three-month period ending in February 1969 for evaluators from the 16 regional centers. This report on educational objectives is one of six summaries of the sessions. Discussion centered first on the role of the evaluator in describing and appraising educational procedures and results, on evaluation as the process of relating facts to values, on evaluation and educational change, and finally on general criteria for approval of Title III proposals. The n followed discussion of New York State's educational goals and needs; a taxonomy of educational objectives was provided and a listing of objectives proposed by various bureaus of the State Department of Education. Finally exercises were given which provided practice in classifying objectives, marking inconsistencies, etc. (Document includes several graphic models and charts.) (EB)

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PROGRAM EVALUATORS HANDBOOK

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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Determining Objectives

ONE OF THE TRAINING
AND REVIEW SERIES
IN
E.S.E.A. TITLE III

The University of the State of New York
THE STATE EDUCATION DEPARTMENT
Albany, New York 12224

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FOREWORD

The increased competition for the tax dollar has caused and will continue to cause more rigorous evaluations in all fields of education, particularly at the Federal level. Increasingly, legislators and their constituent taxpayers are demanding hard data which will indicate whether a costly program is achieving that which it has purported to achieve. Under these conditions evaluation at all levels must satisfy the criteria elements of significance, credibility, and timeliness. Within this framework evaluative techniques must be strengthened.

Appropriate departmental personnel believed that strengthening the evaluative effort of the State might start with the Elementary and Secondary Education Act (ESEA) in general and Title III of that Act in particular. Further, that the 16 existing Regional Centers contained evaluators who might be in a strategic position to disseminate the information gained through a workshop approach.

Leo D. Doherty, Supervisor of Education Research, of the Division of Evaluation was asked to organize some review and training sessions appropriate for the task. He selected people from within the State to prepare and conduct formal lessons accompanied by simulated experiences and related materials. This document is one in a series of six summaries of sessions completed in a 3-month period terminating in February 1969.

While the sessions were paid for out of Title III funds, the contents are appropriate for use with other Titles such as I, or other large program evaluative problems such as those encountered in N.D.E.A., Title III, Urban Education, or the like.

This document on Determining Objectives was prepared by Mauritz Johnson, State University of New York at Albany.

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INTRODUCTION

A new role is emerging in education, that of the evaluator. Not that of an administrator, not that of a teacher, not exactly that of a researcher, the evaluator's role is one of describing and appraising educational procedures and results. The researcher often engages in evaluation, but his purpose is to test hypotheses to generate new knowledge. Administrators and teachers engage in evaluation, but their purposes are to obtain data on which to base decisions affecting students, and to determine the effectiveness of programs and procedures for which they are responsible. The evaluator, on the other hand, may or may not be interested in testing hypotheses and may or may not be responsible for the program being evaluated. His interest is in determining, as accurately as possible, what took place in a given educational situation and what resulted from it.

Title III of the Elementary and Secondary Education Act of 1965 has provided a setting for the elaboration and establishment of the role of evaluation. Evaluation is central in Title III. The Act itself (P.L.89-10) includes an evaluation requirement:

> "...to determine the extent to which funds provided under this Title have been effective in improving the educational opportunities of persons in the area served."

The statement indicates that the purpose of the Title is to improve educational opportunity. This can be done in two ways:

1. Increase opportunity -- by making more education and more kinds of educational opportunity available and by making it available to more people.

2. Improve education -- by making the education for which opportunities are made available more effective.

The objectives of Title III in achieving this purpose are:

1. Innovation -- developing new solutions to educational problems.

2. Exemplification -- demonstrating in a new setting promising solutions developed elsewhere.

New York's State Plan[1] for Title III provides for an organizational structure that reflects the centrality of evaluation. The Center on Innovation (COIN) coordinates innovative activities both within the State Education Department and throughout the State. One of the three components of COIN (Chart 1) is an Evaluation Unit and each of the 16 regional centers includes an evaluator on its staff.

EVALUATION

Evaluation involves relating facts to values. Facts are essential for evaluation and so are values, but neither alone is sufficient. Evaluation is partly objective and partly subjective.

An evaluation model aids understanding. The specifics vary in different evaluative situations, but they can be fitted into a model.

Stake[2] has pointed out that evaluation not only has a descriptive and a judgmental aspect, but also that it is concerned with three aspects of a program: the antecedents or inputs, the transactions or process, and the outcomes or product. His evaluation matrix (Chart 2) provides for recording, for each of these three aspects, descriptive data relating to what is intended by way of inputs, process, and product (intents) and what is actually observed with respect to each (observations). In most educational situations, however, as in most other human endeavors, actualities seldom correspond exactly with intentions. It is necessary in the judgment matrix to first specify the degree of correspondence that is acceptable (general standards) and then to indicate whether, or to what extent, the standards were in fact met (specific judgments).

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[1]New York State Plan, Title III, ESEA, Albany: State Education Department, 1968. Sec. 2.2.1.a

[2]Robert Stake, The Countenance of Educational Evaluation, Urbana: University of Illinois Center for Instructional Research and Curriculum Evaluation, 1966 (Mimeo)

Chart #1

CENTER ON INNOVATION

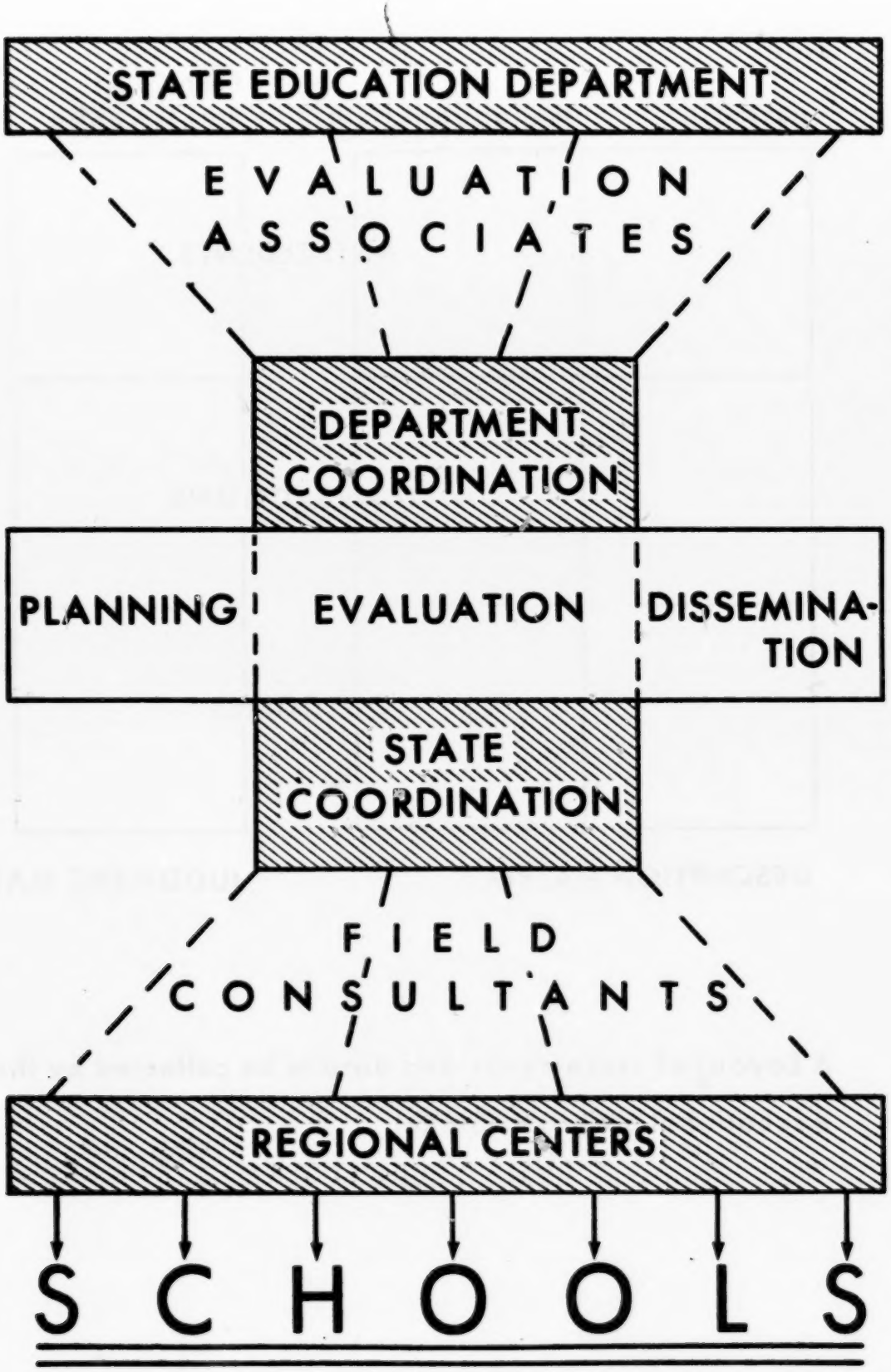
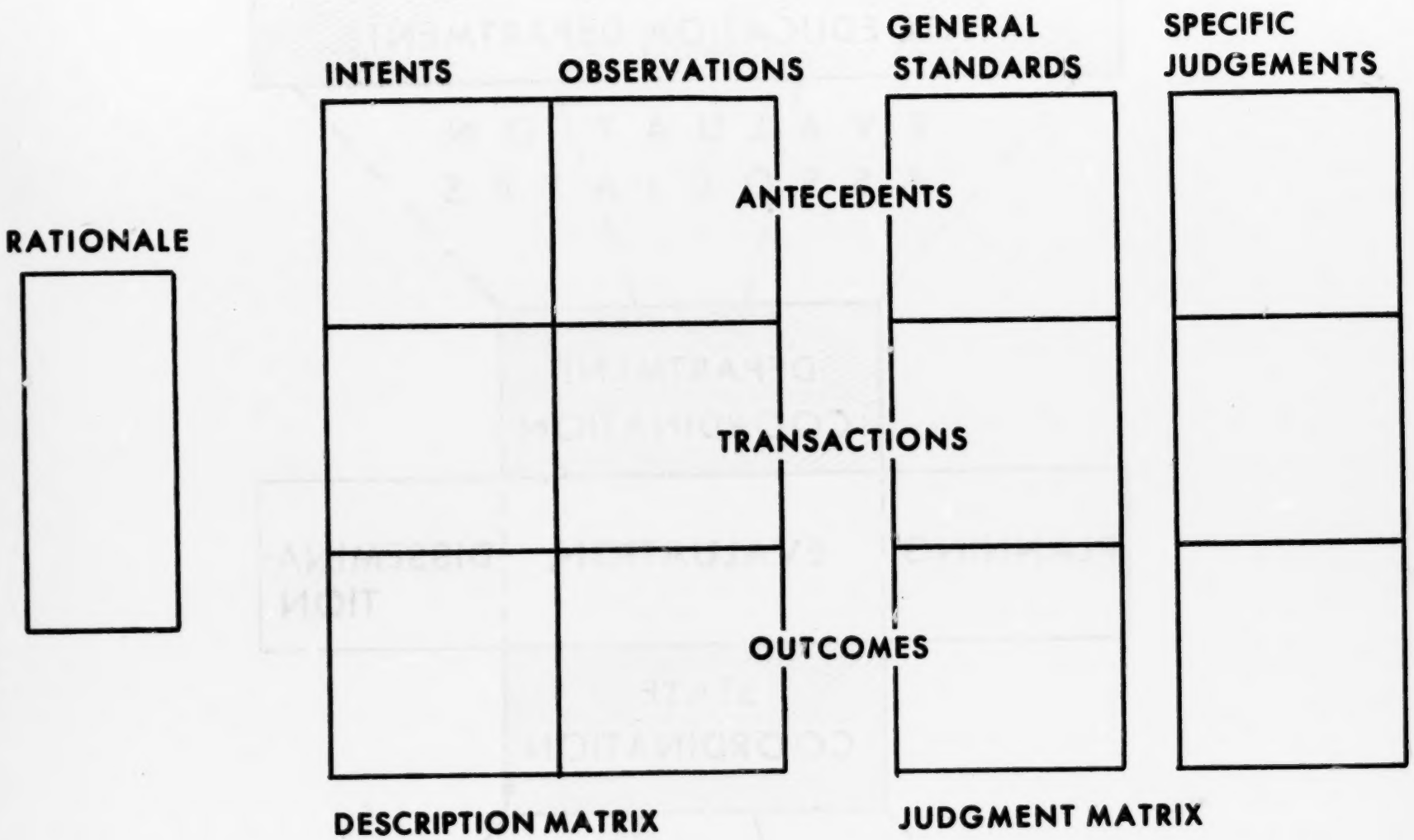


Chart #2



A layout of statements and data to be collected by the evaluator of an educational program. (Stake)

When a single program is involved, the standards are absolute in nature; when there are two or more, the standards are usually comparative. Evaluation of a systematic sort may occur during the course of the program. This formative evaluation provides a basis for improving procedures or revising materials which cannot be done when the summative evaluation occurs upon completion of the program. Its purpose is to provide other potential users with a basis for decision-making.

Whether the evaluation is formative or summative, Stake asserts, it is as undesirable for an evaluator to avoid making judgments on the basis of the facts as it is to make judgments in the absence of the facts. In addition to the contingencies between intents and observations, which are the basic matters for judgment, there are usually, as Stake has indicated (Chart 3) some contingencies among intents that can be logically expected and empirically tested. These contingencies are relationships between certain transactions and certain antecedents or certain outcomes. Thus, when a program on the whole does not appear effective, some of the procedures may be shown to be highly successful in achieving some of the desired results with some of the pupils under some circumstances, or vice versa for an overall effective program.

The CIPP model (Chart 4) developed by Stufflebeam[3] uses different terminology, but includes the same three program aspects as Stake's. In effect, however, it distinguishes two kinds of antecedent: context factors and inputs. The context consists of the setting in which the program functions and goals the program seeks to achieve. The inputs are the elements which enter into the transactions: the plans which guide the process and the resources for carrying it out.

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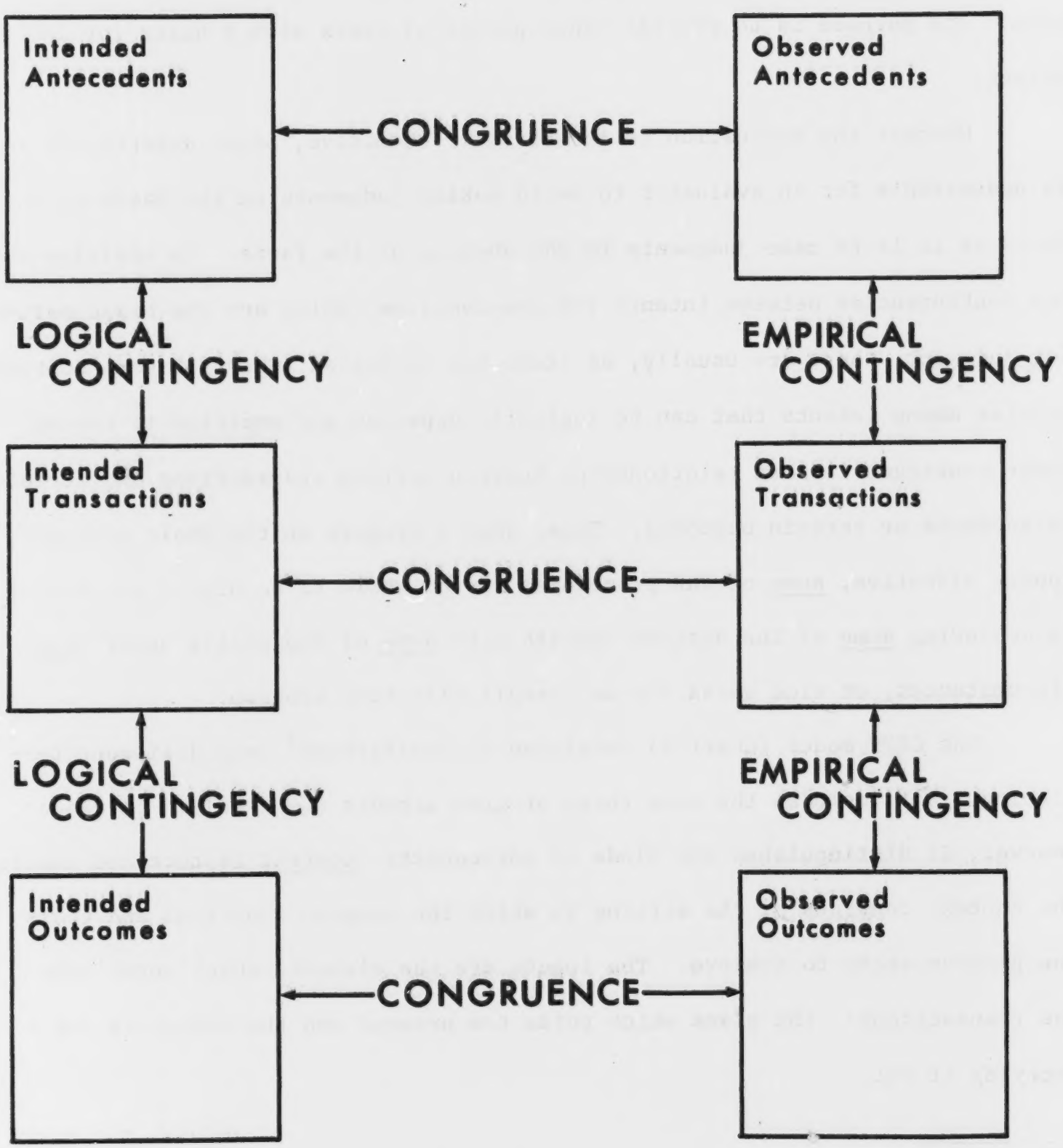
[3]Daniel Stufflebeam, "The Use and Abuse of Evaluation in Title III" Theory into Practice, 6 (June 1967), p. 132.

Chart #3

DESCRIPTIVE DATA



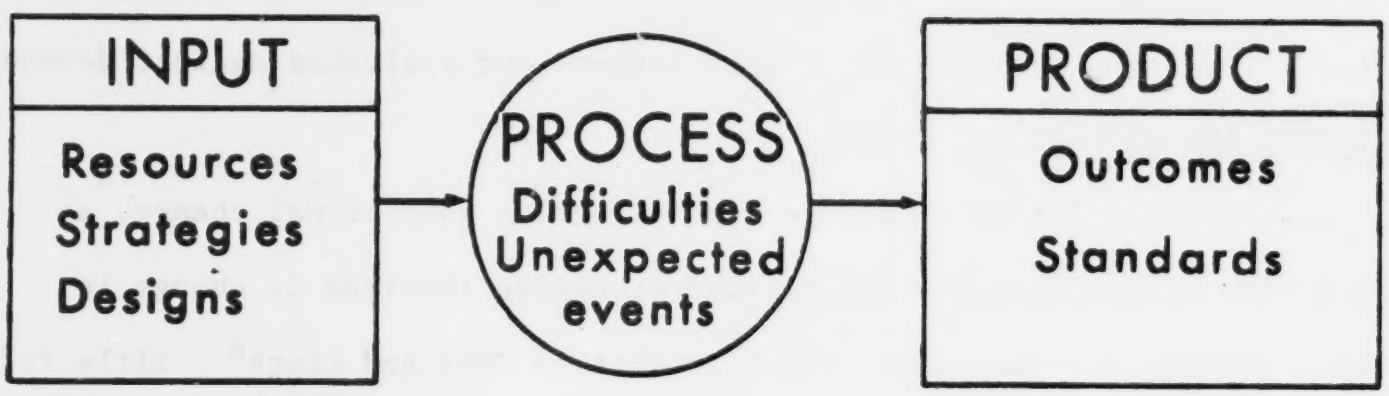
A representation of the processing of descriptive data. (Stake)

Chart #4

STUFFLEBEAM
CIPP EVALUATION MODEL

CONTEXT

Setting - Goals - Needs - Problems



Both of these models call attention to the scope of evaluation. Two other models may help to put evaluation into educational perspective. One, by Johnson,[4] focuses on curriculum and instruction, the heart of the education enterprise (Chart 5). In it, curriculum is viewed as a structured series of intended learning outcomes, which are selected from the total available and teachable cultural content, and which serve as a guide to instruction and as a basis for evaluation of its product. Evaluation here is seen as a comparison between intended and actual outcomes.

In the larger context of the school system as a subsystem of the community, evaluation involves a comparison between the demands placed upon the subsystem by the larger social system and the outputs from the subsystem into the larger system. This administrative model, based on the work of R. J. Hills[5] depicts (Chart 6) a process whereby resources are procured and allocated, along with demands, to appropriate subsystems where educational outputs are created for integration into the higher systems and evaluated against demands.

EVALUATION AND EDUCATIONAL CHANGE

Since Title III is concerned with effecting educational change, an overall view of the distinct but related processes involved in change is useful. Perhaps the best known model is that of Guba and Clark[6]. Title III activities encompass three phases, namely, development, diffusion, and the trial stage in adoption (Table 1). Development and trial both entail evaluation aimed at giving direction to the inventive process and to the decision

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[4]Mauritz Johnson, "Definitions and Models in Curriculum Theory" Educational Theory, 17 (April, 1967), pp. 127-140.

[5]R. Jean Hills, "The Representative Function: Neglected Dimension of Leadership Behavior," Administrative Science Quarterly, 8 (June, 1963), pp. 83-101.

[6]Egon Guba & David Clark, "An Examination of Potential Change Roles in Education" in Rational Planning in Curriculum and Instruction, Washington: National Education Association, Center for the Study of Instruction, 1967, p. 116.

Chart #5

CURRICULUM-INSTRUCTION MODEL

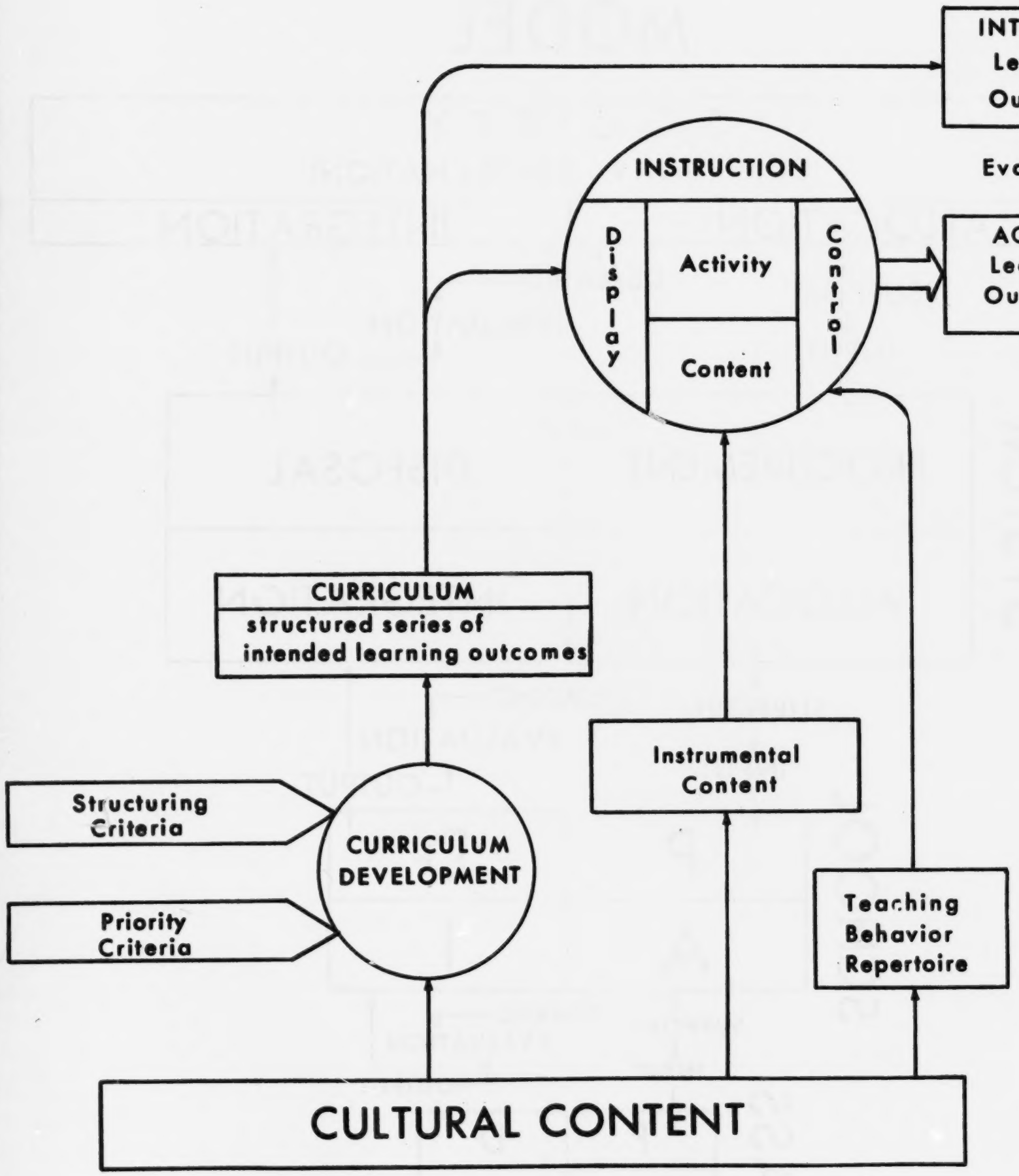

Chart #6

HILLS' ADMINISTRATION MODEL

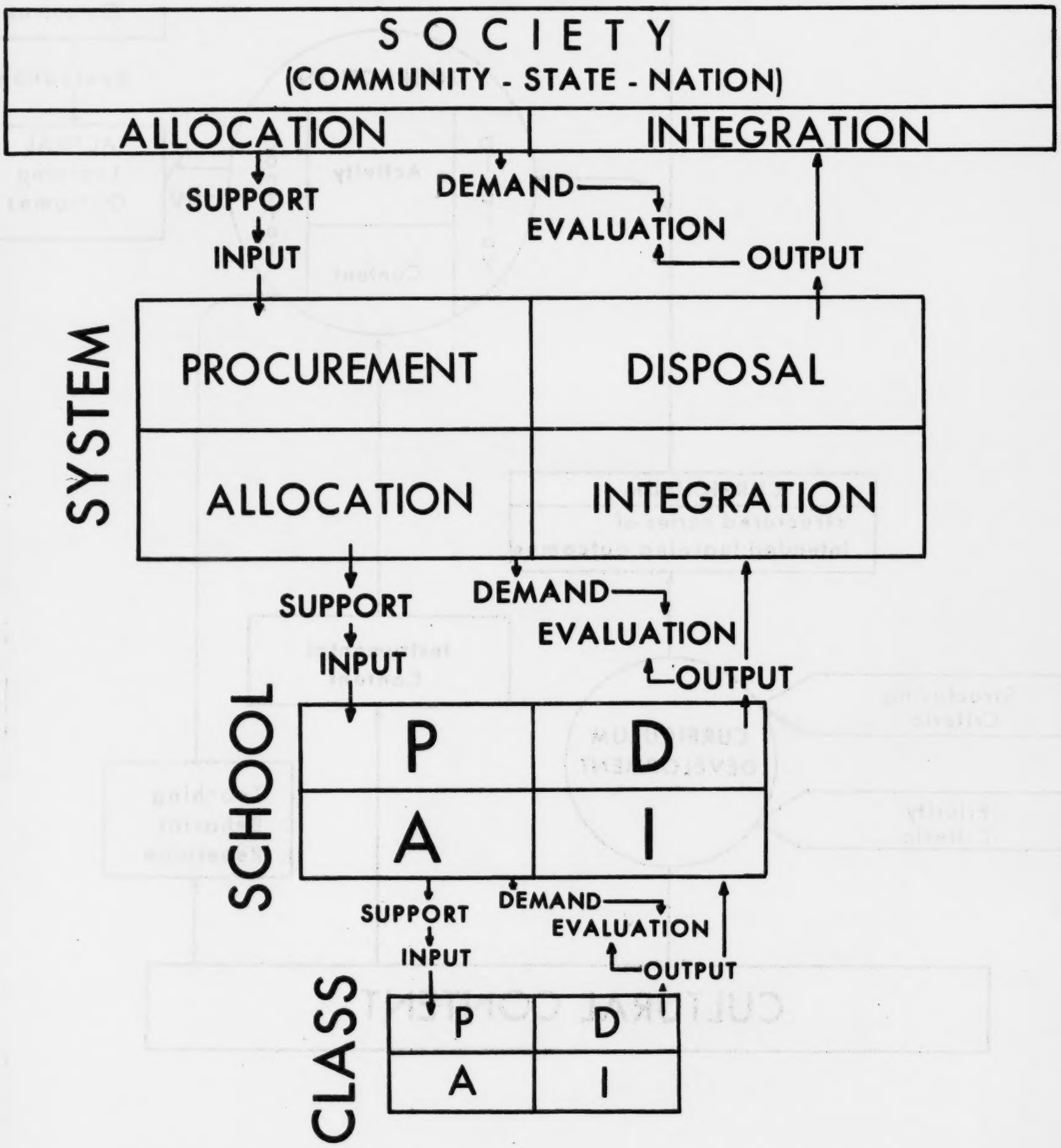

Table #1

Change Models

(Guba-Clark)

RESEARCH		→ Knowledge
DEVELOPMENT	Invention	→ Solution
	Design	→ Package
DIFFUSION	Dissemination	→ Awareness
	Demonstration	→ Conviction
ADOPTION	Trial	→ Familiarity
	Installation	→ Operation
	Institutionalization	→ Assimilation

concerning installation. Diffusion, too, implies evaluated innovations to be disseminated.

The linearity of this model suggests (though its authors do not) that, whenever educational change occurs, the three phases in question must have preceded it and must in turn, have been based on and precipitated by research. To avoid this impression, Gideonse[7] proposed a model depicting three levels, operations, development, and research, shown as planes in Chart 7. At any of these levels, activities may be initiated which may lead to change at the level of operations and which may or may not entail a demand for initiative at another (lower) level.

Aside from its position on some continuum of educational change activity, evaluation in the context of Title III may be seen as occurring at four levels: project, local (regional center), state, and national. Evaluative data at any level inform decision-making regarding the desirability of continuation or revision of programs, and (except at the national level), when communicated to the next higher level, serve as bases for evaluating the total effort at that level. The resulting "feedback control loops" have been depicted by Stufflebeam[8] (Chart 8).

PROJECT EVALUATION

Projects can be evaluated at three points in time: first, as a proposal; second, as a process; and third, as a product. Criteria for evaluating proposals are presented in the Federal guidelines for Title III. The New York State Plan includes 13 such criteria, adapted from the Federal guidelines. They are summarized in Table 2. Criterion 12 refers specifically to evaluation. Criteria 1 and 2 pertain to objectives. (Table 3).

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[7]Hendrik Gideonse, "Research, Development, and the Improvement of Education" Science, 162, (November, 1968), pp. 541-45.

[8]Daniel Stufflebeam, op. cit., p. 130.

Chart #7

GIDEONSE CHANGE MODEL

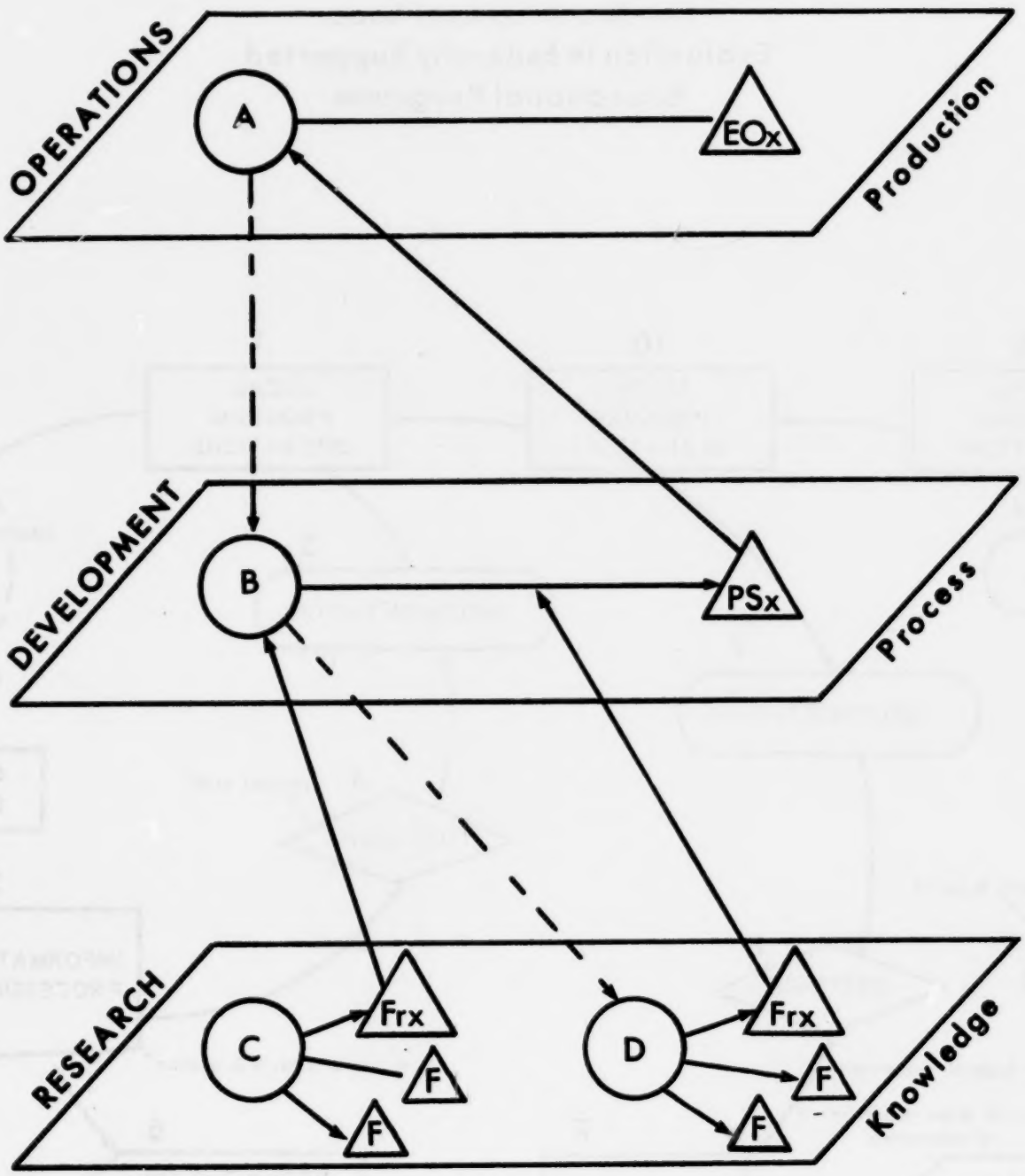


Chart #8

Feedback Control Loop: Evaluation in Federally Supported Educational Programs

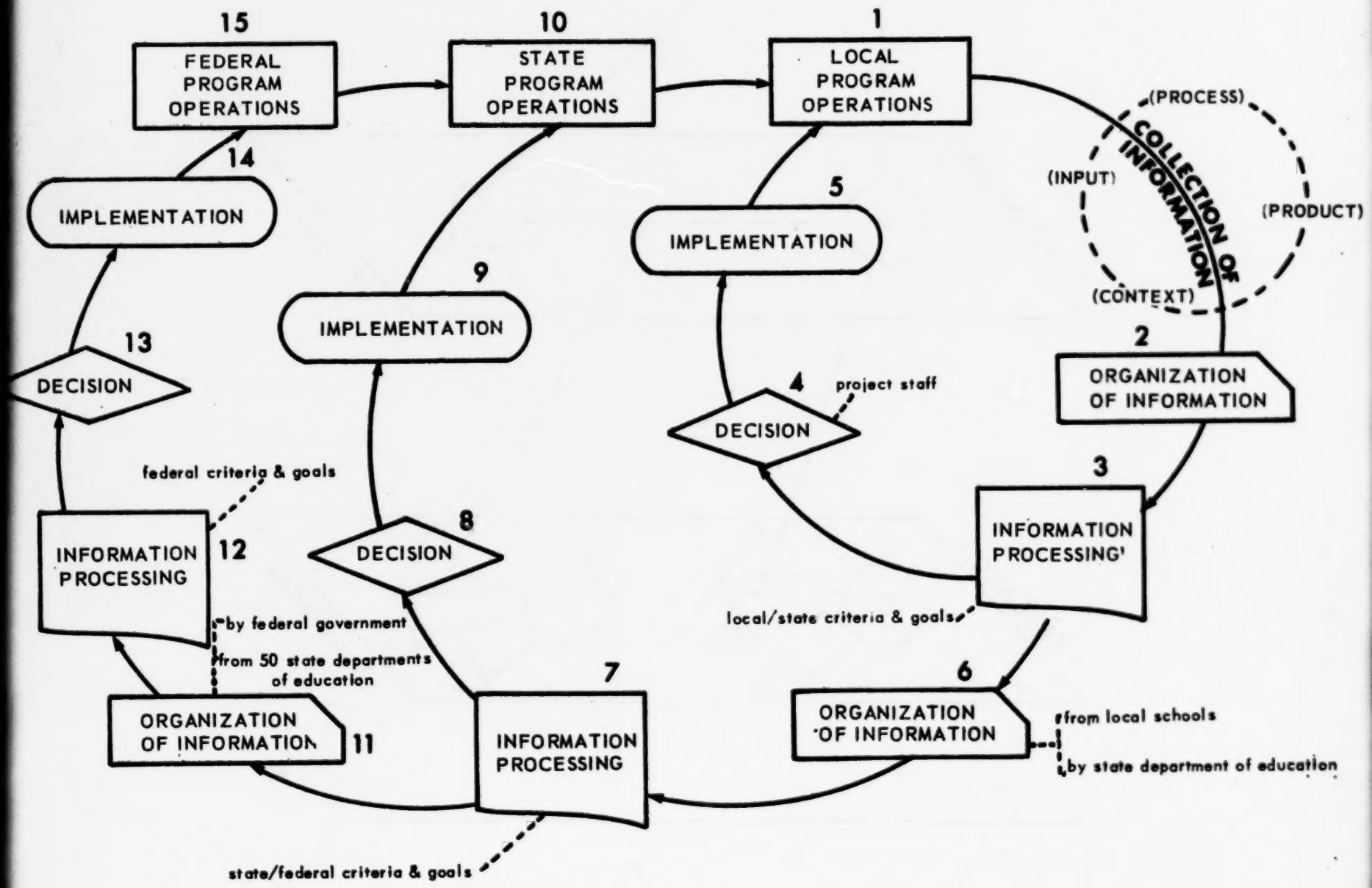


Table 2

General Criteria for Approval
of Title III Proposals

1. Adequacy of the statement of needs and objectives.

2. Significance of the problem in relation to the critical needs of education in the State as determined by the Board of Regents.

3. Adequacy of the solution for solving the problem posed, including evidence of adequate planning and awareness of relevant research, alternative solutions, and similar programs.

4. The probability that the solution, if successful, can be adopted by others with similar problems; this implies that the cost of the solution shall bear a reasonable relation to the personnel, facilities, and funds which might be generally available for implementation.

5. Availability and competency of the personnel to implement the project; suitability of the size and qualifications of the staff proposed; extent to which the best available talent and resources will be utilized to substantially increase the educational opportunities of children to be served by the project.

6. Adequacy and appropriateness of the facilities, equipment, and materials to be used in the proposed project.

7. Adequacy of the evidence that the funds for the proposed project will supplement and not supplant local and State funds.

8. Extent to which the program is innovative in that it presents a new or improved educational idea, practice, or technique; or extent to which the program is exemplary in that the activity is designed to serve as a model for regular school programs.

9. Evidence of the willingness of the district to contribute to the support of the project if it proves successful, and, if initial local support is indicated, that the commitment is officially made.

10. Adequacy of documentation showing the extent of the involvement in planning and implementing project activities of teachers, students, or other school personnel and others, including those with low income, broadly representative of the cultural and educational resources and of the public in the area to be served.

11. Extent to which the proposed project will appropriately involve children in private nonprofit schools.

12. Extent to which provisions for evaluating the proposed project are appropriate and adequate and provide for a reasonable degree of objectivity.

13. Extent to which provisions for dissemination of information about the proposed program are appropriate and adequate for the area to be served.

Table 3

Summary and Classification
of Title III

PROPOSAL CRITERIA

Objectives:

____ statement adequacy (1)

____ priority (2)

Procedures:

____ supplementary (7)

____ general adoptability (4)

____ innovative or exemplary (8)

____ appropriateness

____ adequacy (3)

____ awareness of alternatives (3)

____ wide involvement (10)

____ planning (3)

____ support prospect (9)

____ non-private pupil involvement (11)

____ dissemination (13)

____ staff (5)

____ facilities (6)

Evaluation:

____ appropriateness (12)

____ adequacy (12)

____ objectivity (12)

The process of executing a project can be evaluated by determining whether planned activities are actually being carried out, whether the schedule is being maintained, and to some extent, how competently the procedures are being performed, in terms of what was intended. Evaluation always involves a comparison of actualities with intentions, expectations, or promises.

Ultimately, projects must be evaluated in terms of results. This involves treatment evaluation. It is important to recognize that the objectives of a project can be successfully achieved even though the results of the treatment are unsatisfactory. A major difference between research projects and development (or demonstration) projects should also be recognized. In research, the treatment cannot be altered while in progress. In development, it may well be appropriate to modify procedures or materials on the basis of formative evaluation.

In the long range strategy adopted by New York State for systematically effecting educational improvement through Title III and other mechanisms, the evaluation of solutions is the fifth out of seven steps which may be summarized as follows:

1. Assess needs
2. Define problems
3. Design solutions
4. Implement pilot tests
5. Evaluate solutions
6. Disseminate results
7. Demonstrate solutions

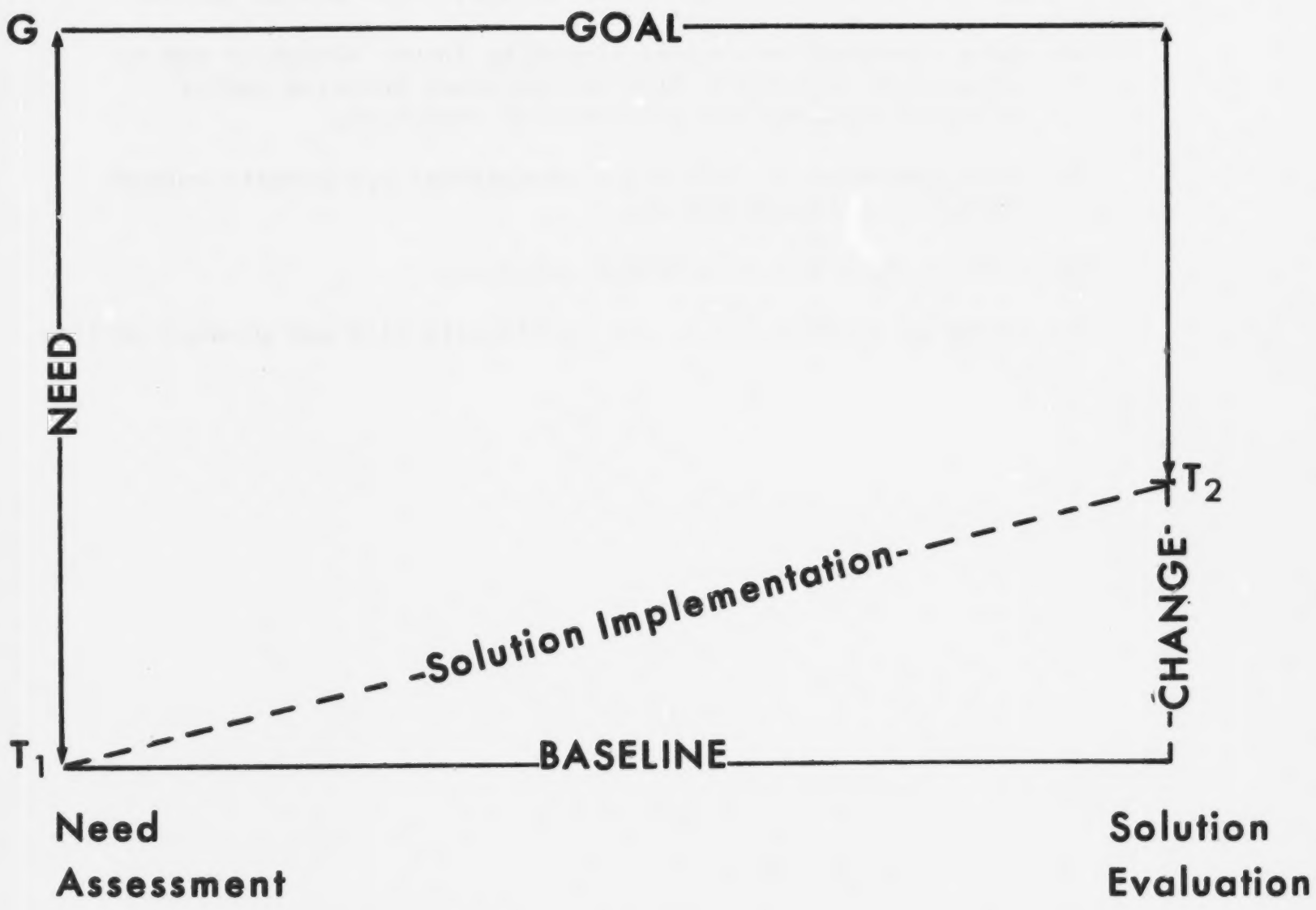
It is obvious that evaluation is also central in three of the remaining six steps, namely the assessing of needs, pilot testing, and demonstrating solutions. The terminology here needs to be clearly understood. A goal is defined as a desired state of affairs. A baseline is an existing state of affairs. The discrepancy between a goal and the corresponding baseline is

a need. Thus, N = G - B. A problem is an obstacle to meeting a need, or achieving a goal. A solution is a series of activities designed to remove an obstacle, to solve a problem, to meet a need, or achieve a goal. The effectiveness of a solution is the extent to which the discrepancy between the baseline and the goal is reduced (Chart 9).

Goals, and hence needs, can be expressed at various levels of generality. The educational goals and needs of New York State, as adopted by the Board of Regents, are necessarily general. (Tables 4 and 5). They indicate broad areas of priority in relation to which specific needs are recognized and the significance of specific problems is judged. Under Title III the limited resources for support of improvement activities are allocated to finding solutions for the most serious problems, the most pressing needs, and the most important goals.

Chart #9

SOLUTION EFFECTIVENESS



$$\text{Solution Effectiveness} = \frac{\text{Change}}{\text{Need}} = \frac{T_2 - T_1}{G - T_1}$$

Table 4

STATE'S EDUCATIONAL GOALS

Assure each individual opportunity for sufficient formal education to enable him to:

(1) develop skills and attitudes and acquire knowledge necessary for successful functioning as an individual and in society;

(2) make constructive choices regarding future education and to advance to and profit from occupational training and/or advanced academic and professional education;

(3) take advantage of continuing educational opportunity outside formal educational system;

(4) benefit from use of cultural resources;

(5) enjoy an intellectually and emotionally rich and productive life.

Table 5

STATE'S GENERAL EDUCATIONAL NEEDS

Improvements and revision in:

1. Development of general skills, knowledge, attitudes

    1.1 Urban
    1.2 Prekindergarten
    1.3 Integration
    1.4 NYC decentralization
    1.5 Summer programs
    1.6 State aid
    1.7 School district reorganization
    1.8 Model educational patterns
    1.9 Instructional technology
    1.10 Employment relations
    1.11 Teacher recruitment, training

2. Development of occupational skills and attitudes

    2.1 City youth and adults
    2.2 Area vocational schools
    2.3 Expanded BOCES programs

3. Development of advanced academic and professional skills

    3.1 Regents master plan
    3.2 Student financial aid
    3.3 Aid for private higher education

4. Development of cultural resources

    4.1 Statewide library system
    4.2 NYS cultural center
    4.3 Educational media

5. Vocational rehabilitation

    5.1 Individual services
    5.2 Community resources

6. Administration of State Education Department

OBJECTIVES

Clearly no solution can be devised, no program designed, no procedures carried out without objectives. The objectives may not be explicitly stated and may not even be recognized, but some objective must be implicit. Before an idea for a solution can be completely developed and before a solution can be evaluated, all of the objectives must be identified and made explicit. When developers have failed to state objectives, evaluators must do so. They should be stated prior to the development. In any event, they must be stated in terms which permit evaluation.

This training program has objectives. The program deals with six topics:

1. Determining objectives
2. Designing solutions (tasks)
3. Gathering data
4. Sources and control of variability
5. Designs for evaluation
6. Presenting proposals and reports

Four main kinds of ability should result from participation in the training program. These are its objectives:

1. Ability to formulate and criticize OBJECTIVES
2. Ability to devise and select SOLUTIONS
3. Ability to design and execute EVALUATION
4. Ability to prepare PROPOSALS and REPORTS

Specific objectives are associated with each topic. Under the present topic, objectives, the following objectives may be identified:

Overall Objective:

To develop increased understanding and competence regarding the formulation of project objectives and activities

Specific Objectives:

1. Understanding of:

   Educational goals

   Priorities in educational needs

   Significant educational problems

   Relation of project objectives to project activities and evaluation

2. Competence in:

   Criticizing statements of objectives

   Writing clear statements of objectives

There are, with respect to any Title III project, two classes of objectives. The relationship between them resembles that between a story-within-a-story and the story itself. That is, the project itself, as a whole, has certain objectives, and the treatment incorporated in the project has its objectives. The treatment objectives are usually educational in nature and concern some kind of learning or behavior change to be effected. The objectives of any project, on the other hand, are to design, execute, and evaluate a treatment.

EDUCATIONAL OBJECTIVES

Educational objectives are expressed as potential outcomes of the learning process or as desired conditions for facilitating that process. The latter are instrumental objectives and refer to improved procedures, contextual features, or personnel competencies. The former are goal-oriented objectives, which have reference to things that can be learned, as a direct result of instruction, or indirectly as a result of certain environmental conditions. These educational objectives should be distinguished from societal goals relating to education. Ability to read is an educational objective; reducing the dropout rate is a societal objective. Table 6 shows the major classes of societal and educational objectives.

Society is concerned with the quality of education both in the sense

Table #6

GENERAL OBJECTIVES
(GOALS)

1. Educationally-relevant SOCIETAL GOALS

QUALITY - Priority
Effectiveness

QUANTITY - Learners
Knowledge

EQUALITY - Geographical
Status

EFFICIENCY - Time
Cost

11. Societally-relevant EDUCATIONAL GOALS

IMMEDIATE		ULTIMATE	
OUTCOMES	DOMAINS	USED	FOR
Cognitive map	COGNITIVE	Replicatively	Self-cultivation
Skills repertoire	PSYCHOMOTOR	Associatively	Citizenship
Valuative map	AFFECTIVE	Interpretively	Vocation
		Applicatively	

that more important educational objectives are not being neglected in favor of less important ones and in the sense that important goals are effectively being achieved. There is a societal concern for quantity, both with respect to the numbers of students to be educated and the increasing amount of knowledge to be transmitted. Some societal problems relate to providing equality of educational opportunity, regardless of location or socioeconomic status. The efficiency of the education enterprise with respect to amount accomplished both per dollar and per unit of time is also an ever present societal concern.

Goal-oriented educational objectives consist of the development of skills and of cognitive and evaluative maps; that is, skills, understandings, and attitudes. Some skills are components of the cognitive domain[9], whereas others belong in the psychomotor domain. The cognitive domain also includes knowledge or understandings, while attitudes or valuative maps represent the affective domain[10]. (Table 7).

Learning outcomes may also be classified according to use. Some are used in the form in which learned (replicatively), some are used even though details are forgotten (associatively), some are used in solving problems (applicatively), and some are used to give meaning to subsequent experiences (interpretively).[11] The range of possible educational objectives includes those primarily serving vocational purposes, those which pertain to the responsibilities of citizenship, and those which contribute to self-cultivation.

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[9]B. S. Bloom et al. Taxonomy of Educational Objectives, I-Cognitive Domain, Longmans, Green, 1956.

[10]D. R. Krathwuhl et al. Taxonomy of Educational Objectives, II-Affective Domain, David McKay, 1964.

[11]Harry Broudy, B. O. Smith, & Joe Burnett, Democracy and Excellence in American Secondary Education, Rand, McNally, 1964.

Table 7

TAXONOMY OF EDUCATIONAL OBJECTIVES

COGNITIVE DOMAIN[1/]

1.00 KNOWLEDGE
- 1.10 Specifics
  - 1.11 Terminology
  - 1.12 Specific facts
- 1.20 Ways and Means of Dealing with Specifics
  - 1.21 Conventions
  - 1.22 Trends and sequences
  - 1.23 Classifications and categories
  - 1.24 Criteria
  - 1.25 Methodology
- 1.30 Universals and Abstractions in a Field
  - 1.31 Principles and generalizations
  - 1.32 Theories and structures

2.00 COMPREHENSION
- 2.10 Translation
- 2.20 Interpretation
- 2.30 Extrapolation

3.00 APPLICATION

4.00 ANALYSIS
- 4.10 Elements
- 4.20 Relationships
- 4.30 Organizational principles

5.00 SYNTHESIS
- 5.10 Production of unique communication
- 5.20 Production of plan or proposed set of operations
- 5.30 Derivation of set of abstract relations

6.00 EVALUATION
- 6.10 In terms of internal evidence
- 6.20 In terms of external criteria

1/ S. Bloom et al., Taxonomy of Educational Objectives, Handbook I: Cognitive Domain, Longmans, Green, 1956, pp. 201-207. Also: D. R. Krathwohl et al., Taxonomy of Educational Objectives, Handbook II: Affective Domain, David McKay Company, 1964, pp. 186-193.

Table 7 (Continued)

AFFECTIVE DOMAIN[2/]

1.0 RECEIVING (ATTENDING)
- 1.1 Awareness
- 1.2 Willingness to receive
- 1.3 Controlled or selected attention

2.0 RESPONDING
- 2.1 Acquiescence in responding
- 2.2 Willingness to respond
- 2.3 Satisfaction in response

3.0 VALUING
- 3.1 Acceptance of a value
- 3.2 Preference for a value
- 3.3 Commitment

4.0 ORGANIZATION
- 4.1 Conceptualization of a value
- 4.2 Organization of a value system

5.0 CHARACTERIZATION BY A VALUE OR VALUE COMPLEX
- 5.1 Generalized set
- 5.2 Characterization

2/ Krathwohl, op. cit., pp. 185-186.

Table 7 (Continued)

PSYCHOMOTOR DOMAIN[3]

1.0 PERCEPTION
- 1.1 Sensory stimulation
  - 1.11 Auditory
  - 1.12 Visual
  - 1.13 Tactile
  - 1.14 Taste
  - 1.15 Smell
  - 1.16 Kinesthetic
- 1.2 Cue selection
- 1.3 Translation

2.0 SET
- 2.1 Mental set
- 2.2 Physical set
- 2.3 Emotional set

3.0 GUIDED RESPONSE
- 3.1 Imitation
- 3.2 Trial and error

4.0 MECHANISM

5.0 COMPLEX OVERT RESPONSE
- 5.1 Resolution of uncertainty
- 5.2 Automatic performance

PSYCHOMOTOR DOMAIN[4]

1.00 Initiatory Level of Execution

2.00 Preroutine Level of Execution
- 2.10 Nonadaptive
- 2.20 Adaptive

3.00 Routinized Level of Execution
- 3.10 Nonadaptive
- 3.20 Adaptive

[3] Elizabeth Simpson, The Classification of Educational Objectives, Psychomotor Domain, University of Illinois--USOE Vocational and Technical Education Grant Contract No. OE 5-85-104.

[4] Jinapala Alles, "An Outline Analysis of Psycho-motor Aspects of Behavior," Theoretical Constructs in Curriculum Development and Evaluation, Ministry of Education, Ceylon, 1967.

Chart 10 provides a classification of societal and educational objectives in the tabular chart form used in the Program Evaluation and Review Technique commonly known as PERT.

STATING OBJECTIVES

Consistent language is difficult in expressing objectives. Some lists mix societal and educational objectives indiscriminately. Some shift from one level of specificity to another. (Table 8). It should be recognized that there are three levels which are relative to each other: values, ends, and means. In general, objectives are ends sought, something to be accomplished. The means consist in what is done to implement the objective, to bring about the desired accomplishments. Values provide the justification for attempting to bring about the accomplishment, to justify the objectives. In general, objectives deal with the question of what result is intended, whereas values deal with why, and means with how. But there is a hierarchy of values, such that all but the highest is itself justified by a higher one. And there is a hierarchy of means, such that all but the lowest are ends achieved through lower means.

In any given situation the objectives should be expressed in terms of what is to be learned, not what activities are to be engaged in, or what ultimate purpose that which is learned is to serve. Mager[12] has stipulated that for evaluative purposes instructional objectives should be so stated as to make clear three things:

(1) What performance is learner to be expected to display (DO what?)

(2) Under what conditions he will be expected to display it (GIVEN what?)

(3) What standards the performance will be required to meet (How WELL, e.g., in terms of speed, accuracy, proportion correct, deviation tolerance, etc.)

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[12] Robert Mager, Preparing Objectives for Programmed Instruction, Fearon, 1961

Chart #10

Tabular Taxonomy of Objectives (PERT)

	Level 1	Level 2	Level 3	Level 4
Objectives	1. Societal	1. 1. Quality 1.2. Quantity 1.3. Equality 1.4. Efficiency		
	2. Educational	2.1. Goal-oriented	2.11. Instructional	2.111. Substantive 2.112. Process 2.113. Affective
			2.12. Non-instructional	
		2.2. Instrumental	2.21. Procedural 2.22. Contextual 2.23. Personal	

Table 8

SOME OBJECTIVES PROPOSED BY
VARIOUS BUREAUS OF STATE EDUCATION DEPARTMENT

1. Increase in use of audio recordings in instruction and learning.
2. Increase students' interest in learning through the use of educational communications media.
3. To increase feelings of adequacy and worth.
4. To enable acceptance of various roles with relation to individuals and groups.
5. To improve computational skills.
6. To improve mathematical understanding (concepts).
7. To increase vocabulary.
8. To make behavior more acceptable.
9. To improve performance on the job.
10. To assist pupil in acquiring marketable skill.
11. To raise occupational interests.
12. To raise pupil's opinion of self.
13. To improve muscular strength.
14. To provide recreational activities that meet the needs and interests of students.
15. To develop skill, knowledge, and appreciation in specific arts and crafts activities.
16. To develop social relationships through recreational activities.
17. To improve attitudes toward habits for the study of music.
18. To promote greater interest in the visual arts.
19. To widen students' horizons; enable him to become more aware of our industrial society.
20. To provide satisfying experiences which will develop his feeling of confidence and self-respect.
21. To encourage a philosophy of mobility of employment coupled with periodic retraining.
22. To develop ability to prepare a simple payroll.
23. To provide supervised, paid, part-time employment in an actual job situation.
24. To develop and refine personality characteristics associated with salesmanship.
25. To provide basic product information needed in selling.
26. To produce more conforming behavior on the part of school children.
27. To improve the holding power of schools.
28. To improve physical health.
29. To provide healthful school environment.
30. Development of curricula to meet individual needs.
31. To encourage earlier, more thorough evaluation of learning problems.
32. To survey and identify the needs of disadvantaged pupils.
33. To improve the organization of secondary schools.
34. Adapt classroom procedures to nature of deprived children.

There is much controversy today concerning the necessity or even desirability of expressing instructional objectives in behavioral terms or even in specific nonbehavioral terms. It is possible to carry out instruction or design treatments on the basis of somewhat vague and general objectives. It is also clear, however, that to evaluate the results of that instruction or treatment, students must be required to perform in some observable way acceptable as evidence that learning has occurred, even though the instruction was not aimed primarily at that kind of performance. Evaluators, therefore, must at some point translate objectives into performance criteria reflecting the acquisition of some learning outcome against which terminal performance may be compared.

Instrumental objectives are educational in that they refer to conditions within the educational setting, e.g. increased use of audiovisual aids, increased use of indirect teacher influence, increased teacher knowledge of latest developments in the disciplines, etc., conditions assumed to be related to the attainment of goal-oriented instructional objectives. Objectives which deal with changes in the behavior or knowledge of teachers, or other school personnel, are of course goal-oriented instructional objectives at another level, but with respect to students' learning, they are instrumental. Whereas societal objectives are valid insofar as they are sanctioned by an appropriate body representing society or the community, instrumental objectives must be demonstrated to be related to the achievement of educational goals. Some projects are specifically designed to demonstrate the relationship between treatment and the achievement of instructional objectives. Where this is not the purpose of the project, it is essential to prove that such a relationship has been reliably demonstrated in the past. Whenever the objectives of a project are not expressed as learning outcomes, it is necessary to show that they are in fact instrumental to the attainment of learning outcomes.

In addition to the clarity with which they are stated, objectives should, according to Miles[13], meet criteria of acceptance, achievability, and appropriateness. Acceptance pertains to what Brackenbury[14] calls commitment, both intellectual and emotional, on the part of those who are to achieve the objectives. Achievability refers to the feasibility of trying to reach a particular goal in the educational setting, whereas appropriateness concerns whether it is desirable to do so, even if feasible. Brackenbury adds one more criterion to Miles' list, namely, worth. This suggests that attention be given to the priority attached to the achievement of a particular objective in contrast with other possible goals.

EXERCISES

A number of abstracts of proposed Title III projects appear on the following pages of this report. Select a few of these at random and attempt to state appropriate goal-oriented objectives for each project. Where the project does not appear to be aimed at producing any direct changes in students, express the objectives in instrumental terms or, if necessary, in terms of specific societal goals.

Exercises numbered 1 through 8 provide practice in classifying objectives, marking inconsistencies, translating needs into problems, appraising the clarity and achievability of stated objectives, assessing priorities, and writing objectives in behavioral terms.

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[13]Mathew Miles, "Planned Change and Organizational Health," in Richard Carlson et al., Change Processes in the Public Schools, Center for the Advanced Study of Educational Administration, University of Oregon, 1965, p. 18.

[14]Robert Brackenbury, "Guidelines to Help Schools Formulate and Validate Objectives" in Center for Study of Instruction, Rational Planning in Curriculum and Instruction, National Education Association, 1967, pp. 89-108.

Exercise 1

Using the numbers in the Tabular Taxonomy of Objectives (Chart 10) classify each of the following objectives:

_____ Interest in classical music

_____ Improved holding power

_____ Enlarged vocabulary

_____ Knowledge of historical facts

_____ Improved test validity

_____ Increased use of programmed instruction

_____ Ability to operate power tools

_____ Decreased racial segregation

_____ Improved physical fitness

_____ Respect for truth on part of students

_____ More questions by students in class

_____ Lengthened library hours

_____ Skill in performing mathematical operations

_____ Understanding of scientific laws

_____ Assistance in making vocational choice

_____ Better orientation of teachers to community

_____ Greater commitment to freedom by students

_____ Grouping by aptitude in particular subjects

_____ Better deductive reasoning

_____ Teachers competent in use of audio-visual tools

_____ Improved classroom atmosphere

_____ Increased understanding of modern math by teachers

_____ Reduced costs of schooling per pupil

_____ Ability to get along with others

Exercise 2

1. The following three objectives were proposed for a program. In what sense are they inconsistent?

   a) To recognize relationships
   b) To develop independent study skills
   c) To encourage reading for personal value and pleasure

2. Which two of the following objectives of a single project are inconsistent with the others?

   a) To provide activities which will help children build up skills...
   b) To improve general motor coordination...
   c) To improve the ability to follow directions...
   d) To increase attention span...
   e) To insure knowledge of directionality...
   f) To provide materials which will teach proper eye movements...

3. What definitions would you desire if confronted with the following project objective?

   "To design, develop, implement, evaluate, and revise as necessary an individualized, learner-centered 'instructional system' which is demonstrably superior to the traditional instruction."

Exercise 3

Classify each of the following test items by the type of knowledge being tested. (Place the number of the sub-category in front of each item.) (Table 7)

Categories
1.0 Knowledge
1.10 Knowledge of Specifics
1.20 Knowledge of Ways and Means of Dealing with Specifics
1.30 Knowledge of Universals and Abstractions in a Field

_____ State Ohm's Law

_____ Give date of Battle of Waterloo

_____ Define sonata

_____ Correct this sentence: We was robbed?

_____ Assign the following to phyla: insects, frogs, turtles

_____ List the phases of mitosis

_____ Describe how to determine the molarity of an acid solution

_____ Explain the wave theory of light

_____ Summarize the pattern of immigration to the U. S. during the 19th century

_____ Identify five characteristics of a good term paper

_____ Pick the best synonym for viscous: limpid, heavy, fierce

_____ Draw a C-sharp note on the treble clef

Exercise 4

When students are learning to do each of the following things, what main category of the cognitive domain is involved? (Place number of category in front of each item.) (Table 7)

Categories
1.0 Knowledge
2.0 Comprehension
3.0 Application
4.0 Analysis
5.0 Synthesis
6.0 Evaluation

_____ Formulate hypotheses

_____ Use abstractions in particular situations

_____ Recognize unstated assumptions

_____ Remember specific facts

_____ List, in order, the steps in a process

_____ Judge a research report

_____ Write a short story

_____ Outline a chapter in a textbook

_____ Define technical terms

_____ Identify logical fallacies in arguments

_____ Get the literal meaning of an article

_____ Detect an author's point of view in an essay

Exercise 5

Try to identify, for each of the following educational needs, as many "problems" or obstacles to meeting the needs possible:

Need: Improve spoken language of disadvantaged students

Problems:

Need: Increase creativity of adolescents

Problems:

Need: Attain greater facility with foreign language

Problems:

Exercise 6

Rate each of the following project objectives on the criteria of clarity and achievability, using the following key:

Clarity	Achievability
1. Very clear	1. Highly likely
2.	2.
3. Fairly clear	3. Fairly likely
4.	4.
5. Very unclear	5. Highly unlikely

Clarity	Objective	Achievability
	To develop a catalog of area natural resources	
	To help girls develop a better self-image	
	To improve classroom instruction through multi-instructional media	
	To provide leadership training for administrators	
	To make modern craft equipment and artist-consultants available to students talented in crafts	
	To publish a periodical with the works of students of a region pertaining to literature, drama, and art	
	To develop self-directed learning habits in students	
	To formulate and implement special curricular programs for students diagnosed as having learning disabilities	
	To prepare low achievers for entry into service-type occupations	
	To recruit, train, and employ impoverished people as paraprofessionals in the schools	

Exercise 7

Rank the following project objectives in terms of the Regents priorities of needs: (Use 1 = highest priority) (Tables 4 and 5)

Objective	Rank
1. To invent new programs in childhood education	
2. To increase children's ability to learn	
3. To mix Negro and white children of all economic levels	
4. To encourage creative teachers to be innovative	
5. To train teacher aides and parents to work with young children	
6. To provide practical experience for preprofessional trainees	
7. To provide facilities for the conduct of research projects	
8. To coordinate health and educational services from birth to lower elementary grades	

Exercise 8

Rewrite in behavioral terms, any 10 of the educational objectives proposed by the bureaus of the State Education Department (Table 8).

Original	Revision

ERIC Clearinghouse
JUL 9 1970
on Adult Education